CLAIMS

1. A sprinkler, comprising:

a riser for receiving a pressurized fluid;

a nozzle;

means for mounting the nozzle at an upper end of the riser for rotation about an axis;

a turbine mounted for rotation inside the riser;

drive means for connecting the turbine to the nozzle so that rotation of the turbine by the pressurized fluid will rotate the nozzle; and

means for preventing over-spinning of the turbine when the pressurized fluid is air or a mixture of water and air.

2. The sprinkler of Claim 1 wherein the over-spinning prevention means includes a brake for selectively engaging the turbine.

3. The sprinkler of Claim 1 wherein the over-spinning prevention means includes a valve for selectively re-directing the fluid around the turbine.

4. The sprinkler of Claim 2 wherein the brake includes at least one float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and disengages a stop member from the turbine.

5. The sprinkler of Claim 3 wherein the valve includes at least one float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and covers at least one inlet orifice.

6. The sprinkler of Claim 3 wherein the valve includes a spring biased valve member that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and covers at least one inlet orifice.

7. The sprinkler of Claim 2 wherein the brake includes a float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water to disengage a stop member from the turbine.

8. The sprinkler of Claim 1 wherein the over-spinning prevention means applies a brake force to the turbine.

9. The sprinkler of Claim 1 wherein the over-spinning prevention means re-directs a mixture of water and air around the turbine.

10. The sprinkler of Claim 2 wherein the brake includes a single cylindrical hollow float that moves upwardly inside a cylindrical guide sleeve when the pressurized fluid entering the lower end of the riser is substantially entirely water and disengages a stop member from the turbine.

11. A sprinkler, comprising:

a riser for receiving a pressurized fluid;

a nozzle mounted at an upper end of the riser for rotation about an axis;

a turbine mounted for rotation inside the riser;

a drive mechanism connecting the turbine to the nozzle so that rotation of the turbine by the pressurized fluid will rotate the nozzle; and

a brake configured and mounted within the riser to selectively engage the turbine to prevent over-spinning of the turbine when the pressurized fluid is air or a mixture of water and air.

12. The sprinkler of Claim 11 wherein the brake includes at least one float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and disengages a stop member from the turbine.

13. The sprinkler of Claim 11 wherein the brake includes a cylindrical hollow float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water to disengage a stop member from the turbine.

14. The sprinkler of Claim 1 wherein the brake locks the turbine against rotation.

15. The sprinkler of Claim 11 wherein the brake includes a single cylindrical hollow float that moves upwardly inside a cylindrical guide sleeve when the pressurized fluid entering the lower end of the riser is substantially entirely water and disengages a stop member from the turbine.

16. A sprinkler, comprising:

a riser for receiving a pressurized fluid;

a nozzle mounted at an upper end of the riser for rotation about an axis;

a turbine mounted for rotation inside the riser;

a drive mechanism connecting the turbine to the nozzle so that rotation of the turbine by the pressurized fluid will rotate the nozzle; and

a valve configured and mounted in the riser to selectively re-direct the fluid around the turbine if the fluid is air or a mixture of water and air.

17. The sprinkler of Claim 16 wherein the valve includes at least one float that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and covers at least one inlet orifice.

18. The sprinkler of Claim 16 wherein the valve includes a spring biased valve member that moves upwardly when the pressurized fluid entering the lower end of the riser is substantially entirely water and covers at least one inlet orifice.

19. The sprinkler of Claim 16 wherein the valve includes a cylindrical float that moves upwardly when the fluid entering the riser is substantially entirely water.

20. The sprinkler of Claim 16 wherein the sprinkler further includes a spring biased generally funnel shaped valve member.